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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,690	12/20/2001	Tatsuo Chiba	TSUK 0005	5149

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EXAMINER	
CHACKO DAVIS, DABORAH	

ART UNIT	PAPER NUMBER
1756	

DATE MAILED: 05/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/018,690	CHIBA ET AL.	
	Examiner	Art Unit	
	Daborah Chacko-Davis	1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7,9-16 and 19-40* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-16,19-40* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-7, 9-16, and 19-40, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 5,648,159 (Sato) in view of U. S. Patent No. 6,207,345 (Kimura et al) .

Sato, in col 2, lines 12-26, lines 30-34, and lines 61-67, in col 3, lines 1-16, in col 7, lines 27-67, in col 9, lines 24-67, and in col 10, lines 15-21, discloses a photosensitive element (dry resist) comprising a support film that comprises a biaxially oriented polyester film (laminated film), a resin layer (layer A) that contains particles formed on at least one side of the polyester film, and a photoresist layer (photosensitive resin composition) formed on the opposite side of the polyester film (laminate) forms a coating film that is subjected to drying, wherein the photoresist composition comprises a polymeric binder, a photopolymerizable compound including a methacrylate compound (ethylenically unsaturated group), and a photopolymerization initiator (photodimerizable materials). Sato, in col 9, lines 23-45, that the heat shrinkage ratio in the longitudinal direction (biaxially stretched in the longitudinal direction) of the support film (polyester laminated film) that is heated for at least a total of 30 minutes (heat many times) to a

temperature range of about 75°C to about 250°C is less than 30% (claims 1-6, 12-14). Sato, in col 7, lines 1-10, discloses that the laminated film (photoresist coated polyester film, dry resist) has a remarkable improvement in the slipperiness of the laminated film i.e., the contact angle is greater than 1 (claim 7). Sato, in col 4, lines 6-7, discloses that the average particle size of the particles in layer A (resin layer A) is in the range of about 0.01 to 3.0μ (claim 9). Sato, in col 3, lines 18-21, discloses that the thickness of the resin layer A is about 0.05 to about 3μ (claim 10). Sato, in col 6, lines 12-14, discloses that the haze of the film (laminated film) is about 1% (claim 11). Sato, in col 6, lines 41-42, discloses that the laminated film is wound up and has a surface roughness that is not less than 0.008μ and therefore has excellent winding characteristics (no winding deviation) (claims 20-21). Sato, in col 12, lines 1-14, discloses that the laminated film structure (dry resist) is laminated on a glass substrate and irradiated with UV light during exposure and then developed to form a resist pattern which is then subjected to etching to form circuit patterns (wiring patterns) (claims 22-23). Sato, in col 12, lines 1-14, discloses that the laminated film structure (dry resist) is laminated on a glass substrate and irradiated with UV light and developed and etched to form a resist pattern which is then subjected to etching to form circuit patterns (wiring patterns, greater than 1μ width) (claims 31-33, 29, and 39).

The difference between the claims and Sato is that Sato does not disclose that the photopolymerizable compound comprises a bisphenol A type (meth)acrylate compound. Sato does not disclose that the photopolymerization initiator is 2,4,5-triaryl imidazole dimer. Sato does not disclose that the binder polymer in the photosensitive

resin composition has a weight average molecular weight of about 20,000 to about 300,000 (claim 15). Sato does not disclose that the acid value of the binder polymer is 50 to 300 mg KOH/g (claim 16). Sato does not disclose the formulation amounts of the components (A), (B), and (C) recited in claim 19. Sato does not disclose that the unevenness on the side surface of the resist pattern or the wiring pattern is 0 to 3μ (claims 24, and 34). Sato does not disclose that the number of unevenness larger than 3.0μ on the center line of the side surface of the resist pattern or the wiring pattern is 0 to 5/4mm (claims 25, and 35). Sato does not disclose that the average roughness on the side surface of the resist pattern or the wiring pattern is 0 to 2μ (claims 26, and 36). Sato does not disclose that the maximum height on the side surface of the resist pattern or the wiring pattern is 0 to 3μ (claims 27-28, and 37-38). Sato does not disclose that the height of the resist pattern is 1 to 150μ (claim 30). Sato does not disclose that the height of the wiring pattern is 0.01 to 200μ (claim 40).

Kimura, in col 3, lines 65-67, in col 4, lines 2-5, and lines 54-64, and in col 5, lines 7-15, discloses that the photopolymerizable compound in the photosensitive resin composition includes compounds such as methacrylates of bisphenol A. Kimura, in col 4, lines 5-12, discloses that the polymeric binder of the photosensitive resin composition includes a carboxyl group-containing binder having a weight average molecular weight of about 10,000 to about 500,000, and said binder polymer has an acid value of about 30 to 300. Kimura, in col 4, lines 33-44, discloses that the photopolymerization initiator is 2,4,5-triarylimidazole dimer. Kimura, in col 9, Table 1, discloses a photosensitive resin composition that includes 60 parts by weight of the binder polymer, 40 parts by

weight of photopolymerizable compound, and 5 parts by weight of the polymerization initiator. Kimura, in col 6, lines 66-67, in col 7, lines 1-8, in col 8, lines 49-67, and in col 9, lines 1-20, discloses that the resist pattern developed from the laminate film has a lowered or no surface unevenness or surface roughness and has a resist pattern or corresponding wiring pattern (resist pattern imparts the same surface roughness to the corresponding wiring pattern) height of 14μ.

Therefore, it would be obvious to a skilled artisan to modify Sato by employing the photopolymerizable compound suggested by Kimura in the photosensitive resin composition and employing the photosensitive composition (components A, B, and C) suggested by Kimura because Kimura, in col 3, lines 65-67, and in col 4, lines 1-5, discloses that employing the suggested composition in the photosensitive resin composition enables development of the imaged resist in a dilute alkaline developer, and in col 3, lines 16-20, discloses that using the resin composition suggested in the laminated film results in a laminate film that has a haze of less than 10%.

Response to Arguments

3. Applicant's arguments filed 01/19/2005, have been fully considered but they are not persuasive. The 103 rejection made in the previous office action paper no. 0713) has been maintained.

A) Applicant argues that Sato does not disclose a bisphenol A type (meth)acrylate compound, and a photopolymerization initiator that comprises a 2,4,5-triaryl imidazole dimer.

Sato is not depended upon to provide the disclosure of the claimed photopolymerizable compound, and the triaryl imidazole dimer. Kimura's disclosure is depended upon for the claimed compound and photoinitiator.

B) Applicants argue that Kimura does not teach a resin layer containing fine partices formed on the opposite surface of the support film to which the photosensitive resin composition layer is formed.

Sato is depended upon to provide the disclosure of coating the photosensitive composition on both sides of the polyester fim laminate. Kimura is not depended upon to provide this limitation.

C) Applicants argue that neither Sato not Kimura disclose that the unevenness of the resist pattern in 0 to 3 microns, and that the unevenness on the center line of the side surface of the resist pattern is 0 to 5/4mm.

Kimura is depended upon to disclose the limitation. Kimura teaches that the resist pattern has no surface roughness or unevenness which is equivalent to an unevenness or surface roughness of 0 micron.

Conclusion

4. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

May 16, 2005.

MARK F. HUFF
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700